

USSN: 10/810,065Attorney Docket No.: 55752US019**Amendment to the Drawing**

Please amend Fig. 9 (Sheet 7) by substituting the accompanying Replacement Sheet in which arrows and a label indicating dimension  $l_e$  have been added. Dimension  $l_e$  is referred to in paragraph 0072, and may also be seen in Fig. 7 and Fig. 10.

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### Remarks

Paragraph 0005 and the drawing have been editorially amended. New claims 52-61 have been added. Support for these new claims may be found at, e.g., paragraph 0052. Following entry of this amendment, claims 1-61 will be pending in this application.

Applicant thanks the Examiner for extending to the undersigned attorney and Dr. Kolb the courtesy of an in-person interview on Tuesday, May 31, 2005. At the interview the arguments set out below were discussed, and the Examiner was shown a blueprint for the drying system enclosures in Yapel et al. U.S. Patent No. 5,906,862. The Yapel et al. drying system did not carry out "dry converting" (see e.g., paragraph 0028). The blueprint is not prior art, but shows that the Yapel et al. drying enclosures had a combined headspace plus footspace of 12 inches (30.5 cm), and were not close enclosures (see e.g., paragraph 0039).

The enclosed form PTO-892 accompanied the April 12, 2005 Office Action and was reprinted from the Public PAIR system. The form PTO-892 cites U.S. Patent No. 6,565,017 (Fath et al.). As discussed during the interview, Fath et al. involves a fuel injection valve for a combustion engine and was not the intended citation. Instead, U.S. Patent No. 6,656,017 (Jackson) should have been cited. Applicant requests that a new form PTO-892 containing a citation to Jackson be returned with the next official communication.

### Rejection of Claims 1-6, 8, 9, 12-18, 24-31, 33, 36-39, 41, 42 and 48-51 under 35 USC §102(b)

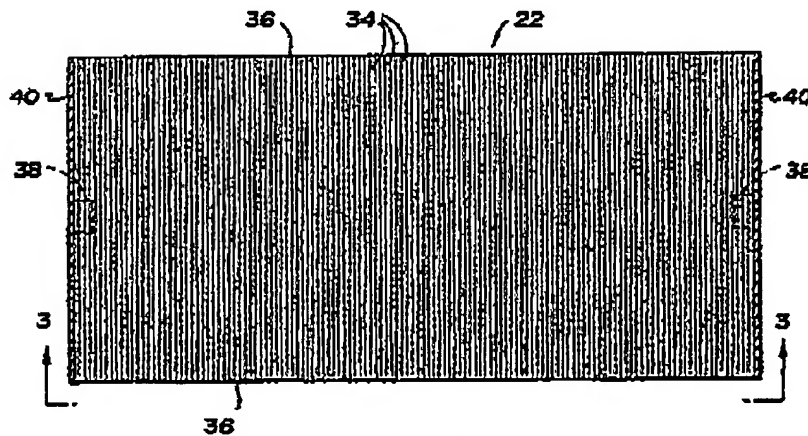
Claims 1-6, 8, 9, 12-18, 24-31, 33, 36-39, 41, 42 and 48-51 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 5,536,333 (Foote et al.), on grounds *inter alia* that:

*"Foote et al. shows A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure (fig. 1, fig. 6, col. 11, lines 54-58)" (see the Office Action at page 2).*

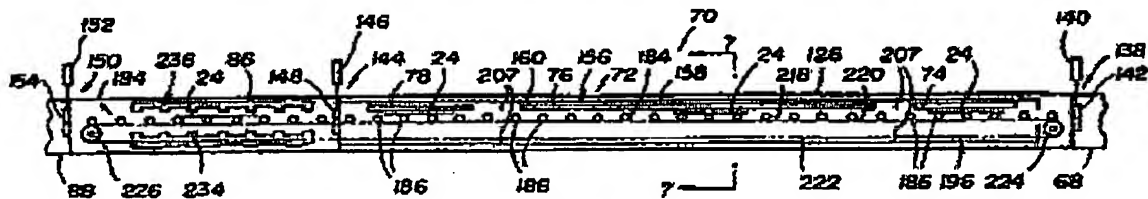
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Reconsideration is requested. Foote et al. do not carry out a dry converting operation on a "moving substrate of indefinite length" (viz., a moving web, see applicant's paragraph 0003) as recited in rejected claims 1-6, 8, 9, 12-18, 24-31, 33, 36-39, 41, 42 and 48-51. Foote et al. deposit semiconductor materials on 60 cm x 120 cm (2 ft by 4 ft) rectangular glass sheets 24 (see e.g., col. 6, lines 33-41 and Fig. 2, reproduced below):

*Fig. 2*

Foote et al. convey a glass sheet 24 into deposition station 70, actuate valves 138 and 144 to seal deposition zone 72, and treat sheet 24 under first, second or third deposition stations 74, 76 and 78 (see e.g., col. 7, lines 25-30, col. 8, line 48 through col. 9, line 12 and Fig. 6, reproduced below):

*Fig. 6*

Foote et al. may carry out semiconductor deposition on individual sheets 24 but Foote et al. do not dry convert a "moving substrate of indefinite length". Applicant accordingly requests withdrawal of the 35 USC §102(b) rejection of claims 1-6, 8, 9, 12-18, 24-31, 33, 36-39, 41, 42, 48-51 as being anticipated by Foote et al.

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**Rejection of Claims 1, 7, 26 and 32  
under 35 U.S.C §102(e)**

Claims 1, 7, 26 and 32 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,656,017 B2 (Jackson), on grounds that:

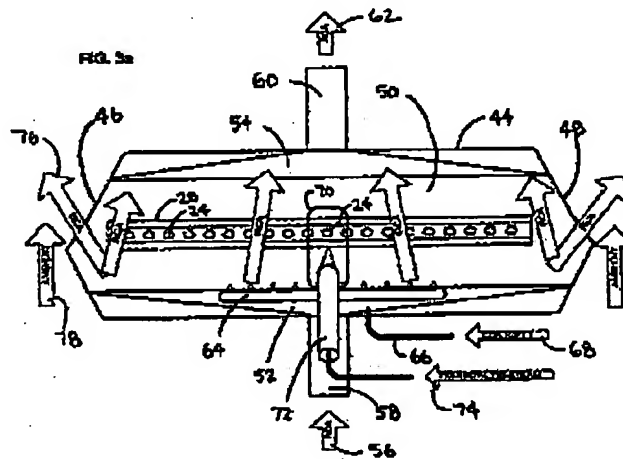
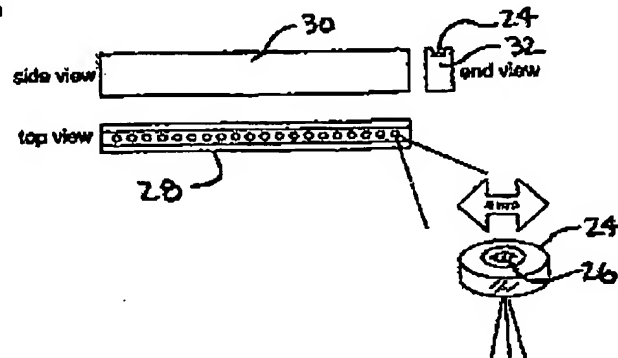
*"Jackson shows A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure (col. 3, lines 41 -50, fig. 3a, col. 1, lines 46-52), conveying the substrate in a close enclosure or series of close enclosures from a cabinet containing an unwind reel to a cabinet containing a takeup reel (fig. 6b), a dry converting station and substrate-handling equipment for conveying the substrate through the dry converting station, the substrate being enveloped in the dry converting station by a close enclosure supplied with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure (col. 3, lines 41-50, fig. 3a, col. 1, lines 46-52), the substrate is-enveloped in a close enclosure or series of close enclosures from a cabinet containing an unwind reel to a cabinet containing a takeup reel (fig. 6b)." (see the Office Action at page 5).*

Reconsideration is requested. Jackson does not show carrying out a dry converting operation on a "moving substrate of indefinite length" in a "close enclosure" as recited in rejected claims 1, 7, 26 and 32, and does not show conveying or enveloping a substrate in a close enclosure or series of close enclosures "from a cabinet containing an unwind reel to a cabinet containing a takeup reel" as recited in rejected claims 7 or 32. Jackson's cited Fig. 3a embodiment is a device for cleaning an "Auer Boat" filled with photodiodes (see e.g., col. 6, lines 35-41 and 55-64, and Fig. 2a and Fig. 3a, reproduced below):

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FIG. 2a



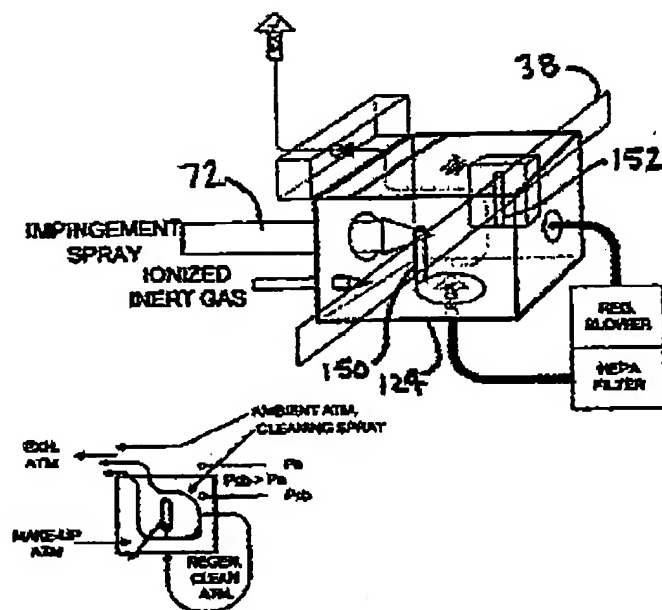
Jackson's Auer Boat is not a "moving substrate of indefinite length".

Jackson's cited Fig. 6b embodiment is a cleaning cell 124 said to be used to clean "an exemplary taped or reeled substrate (38)" (see e.g., col. 9, lines 32-62 and Fig. 6a, reproduced below):

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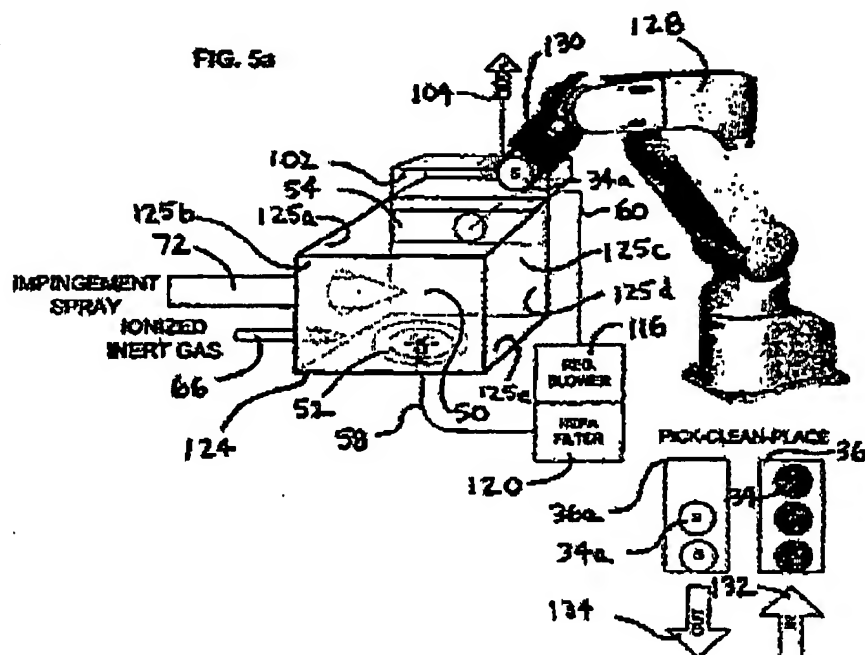
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FIG. 6a



Jackson says that all other features of the Fig. 6a/FIG. 6b embodiment are as described in Fig. 5a/FIG. 5b (see e.g., col. 9, lines 38-41 and Fig. 5a, reproduced below):

FIG. 5a



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Cleaning cell 124 has an "open top" and "five sides", those sides being "four solid vertical side panels" and a "solid bottom side panel". Jackson does not provide dimensions for cleaning cell 124 or the substrates 34. If the "exemplary wafer substrate" 34 (see column 5, lines 10-11) is a typical semiconductor wafer, then cleaning cell 124 would be quite large. In any event, Jackson's cleaning cell 124 is not disclosed to be a "close enclosure" as recited by applicant (see e.g., applicant's paragraph 0039).

Also, Jackson does not disclose "conveying the substrate in a close enclosure or series of close enclosures from a cabinet containing an unwind reel to a cabinet containing a takeup reel" as recited in rejected claim 7 and does not disclose a substrate "enveloped in a close enclosure or series of close enclosures from a cabinet containing an unwind reel to a cabinet containing a takeup reel" as recited in rejected claim 32. Jackson's pay-out and take-up reels are not shown in cabinets (see Fig. 2c, reproduced below). Except when inside cleaning cell 124, Jackson's substrate 38 appears to be conveyed from pay-out reel 158 to take-up reel 160 without being enveloped in anything (see Fig. 6a, shown above, and Fig. 6b, reproduced below):

FIG. 2a

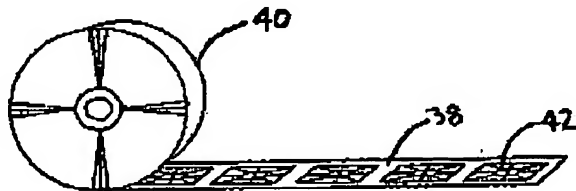
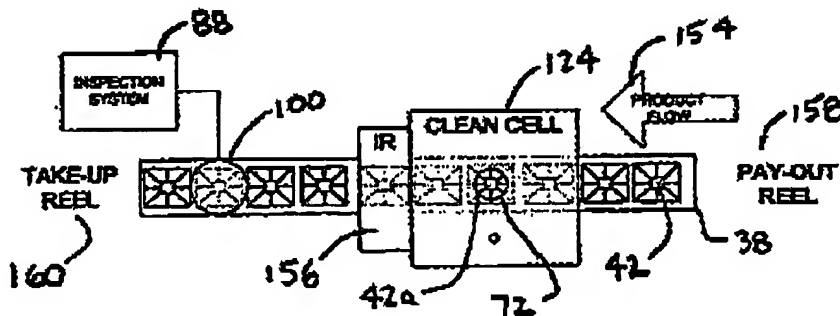


FIG. 6b



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Jackson does not anticipate any of rejected claims 1, 7, 26 or 32. Applicant accordingly requests withdrawal of the 35 USC §102(e) rejection of claims 1, 7, 26 and 32 as being anticipated by Jackson.

**Rejection of Claims 10, 11, 19-23,  
34-35 and 43-47 under 35 USC §103(a)**

Claims 10, 11, 19-23, 34-35 and 43-47 were rejected under 35 USC §103(a) as being unpatentable over Jackson, on grounds, *inter alia*, that:

*"Jackson discloses A process for dry converting a moving substrate of indefinite length comprising conveying the substrate through a dry converting station in a close enclosure while supplying the enclosure with one or more streams of conditioned gas flowing at a rate sufficient to reduce materially the particle count in the close enclosure (col. 3, lines 41-50, fig. 3a, col. 1, lines 46-52). ... Jackson discloses applicant's invention substantially as claimed with the exception of series of interconnected, plurality, 5 cm or less, 3 cm or less, second. At the time the invention was made it would have been an obvious matter of design choice to a person of ordinary skill in the art to have of series of interconnected, plurality, 5 cm or less, 3 cm or less, second because applicant has not disclosed that the number of enclosures, or chambers, or height of the headspace or footspace provides an advantage, is used for a particular purpose or solves a stated problem, -0.25, -0.10. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the number of enclosures or chambers, or height, or flow of Jackson or the claimed number and height, or flow because both quantities and lengths perform the same function of processing the substrate in a conditioned micro-environment equally well." (See Office Action at pages 5-7).*

Reconsideration is requested. For the reasons already expressed above, Jackson does not disclose conveying a "moving substrate of indefinite length" through a dry converting station "in a close enclosure" as recited in claim 1 from which rejected claims 10, 11 and 19-23 depend. Also, Jackson does not disclose an apparatus for converting a "moving substrate of indefinite



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length" in which the substrate is enveloped in a dry converting station by a "close enclosure" as recited in claim 26 from which rejected claims 34-35 and 43-47 depend.

Applicant provided ample evidence regarding the purpose and advantages of the recited close enclosures. For example, applicant stated in paragraph 0053 that:

*"The airflow required to attain a desired low particle count may vary in part with the square of the combined headspace and footspace, and accordingly the disclosed gaps desirably have relatively small values. Similarly, best results appear to be achieved when the total of the average headspace and average footspace is 10 cm or less, 5 cm or less, 3 cm or less, or even smaller values, e.g., 2 cm or less, 1.5 cm or less, or 0.75 cm or less."* (emphasis added).

Applicant also stated in paragraph 0056 that:

*"Through appropriate use of conditioned gas and adjustment of the pressure gradient, particle count reductions of, for example, 50% or more, 75% or more, 90% or more or even 99% or more may be achieved."*

By observing these recited relationships, very low particle count environments may be attained at very low flow rates, thus facilitating the processing of sensitive substrates (see e.g., paragraph 0003).

As shown in applicant's Example 1 (in which the enclosure had a 4.45 cm total headspace plus footspace), material particle count reductions were obtained at pressures greater than or equal to about -0.5 Pa, with the particle counts being well below the instrument detection threshold at positive pressures. Contrary to the assertion in the Office Action, this represents a showing that applicant's recited invention "provides an advantage, is used for a particular purpose or solves a stated problem", Applicant's Examples 2 through 8 demonstrate additional instances in which applicant's recited invention provides an advantage, is used for a particular purpose or solves a stated problem. Applicant shows, *inter alia*, how to obtain a low particle count environment for carrying out a dry converting step. Jackson does not disclose or suggest conveying a moving substrate of indefinite length through a dry converting station in a close enclosure.

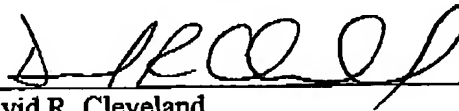
USSN: 10/810,065Attorney Docket No.: 55752US019**Conclusion**

Applicant has made an earnest effort to overcome the rejections. Foote et al. do not dry convert a moving substrate of indefinite length. Jackson does not disclose or suggest conveying a moving substrate of indefinite length through a dry converting station in a close enclosure. Withdrawal of all rejections and allowance of applicant's claims is requested. The Examiner is encouraged to telephone the undersigned attorney at 612-331-7412 if there are any questions regarding this amendment.

June 2, 2005

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